IN THE CLAIMS:

Please amend the claims as indicated below:

1. (Previously Presented) A method for compensating for polarization mode dispersion in an optical fiber communication system, comprising the steps of:

reducing said polarization mode dispersion using a cascade of two-port all-pass filters; and

adjusting coefficients of said two-port all-pass filters using a least mean square algorithm, wherein said adjusting step is performed by a device.

2. (Previously Presented) The method of claim 1, wherein said cascade of two-port all-pass filters comprises a two-channel structure consisting of multiple cascades of all-pass filters and directional couplers.

3. (Original) The method of claim 1, wherein said coefficient values are adjusted to minimize a cost function.

4. (Original) The method of claim 1, further comprising the step of measuring said polarization mode dispersion in a received optical signal.

5. (Original) The method of claim 4, wherein said measuring step employs a tunable narrowband optical filter to render information from energy detector measurements.

6. (Previously Presented) The method of claim 1, wherein said cascade of two-port all-pass filters comprises a first all-pass filter A having a vector a comprised of P coefficients and a second all-pass filter B having a vector b comprised of Q coefficients and wherein said least mean square algorithm adjusts said coefficients as follows:

$$\mathrm{w}(n+1) = \mathrm{w}(n) - \mu\nabla(J),$$

where n indicates the current iteration number and w is a composite coefficient vector defined as:

$$\mathrm{w} = \begin{bmatrix} \mathrm{a} \\ \mathrm{b} \end{bmatrix}, \ \nabla(J) \equiv \left[\frac{\partial J}{\partial \mathrm{a}^T} \frac{\partial J}{\partial \mathrm{b}^T} \right]^T$$

is the $(P+Q)\times 1$ complex gradient of J with respect to w and T indicates a transpose operation, and

$$\frac{\partial J}{\partial \mathrm{a}^T} \equiv \left[\frac{\partial J}{\partial a_1} \quad \frac{\partial J}{\partial a_2} \quad \cdots \quad \frac{\partial J}{\partial a_P} \right], \text{ and}$$

$$\frac{\partial J}{\partial \mathrm{b}^T} \equiv \left[\frac{\partial J}{\partial b_1} \quad \frac{\partial J}{\partial b_2} \quad \cdots \quad \frac{\partial J}{\partial b_Q} \right].$$

7. (Previously Presented) A method for compensating for polarization mode dispersion in an optical fiber communication system, comprising the steps of:

reducing said polarization mode dispersion using a cascade of two-port all-pass filters; and

adjusting coefficients of said two-port all-pass filters using a Newton algorithm, wherein said adjusting step is performed by a device.

8. (Previously Presented) The method of claim 7, wherein said cascade of two-port all-pass filters comprises a two-channel structure consisting of multiple cascades of all-pass filters and directional couplers.

9. (Original) The method of claim 7, wherein said coefficient values are adjusted to minimize a cost function.

10. (Original) The method of claim 7, further comprising the step of measuring said polarization mode dispersion in a received optical signal.

11. (Original) The method of claim 10, wherein said measuring step employs a tunable narrowband optical filter to render information from energy detector measurements.

12. (Previously Presented) The method of claim 7, wherein said cascade of two-port all-pass filters comprises a first all-pass filter A having a vector a comprised of P coefficients and a second all-pass filter B having a vector b comprised of Q coefficients and wherein said Newton algorithm adjusts said coefficients as follows:

$$w(n+1) = w(n) - \mu H^{-1}\nabla(J)$$

where n indicates the current iteration number and w is a composite coefficient vector defined as:

$$w = \begin{bmatrix} a \\ b \end{bmatrix},\ \nabla(J) \equiv \begin{bmatrix} \frac{\partial J}{\partial a^T} \frac{\partial J}{\partial b^T} \end{bmatrix}^T$$

$\frac{\partial J}{\partial a^T} \equiv \begin{bmatrix} \frac{\partial J}{\partial a_1} & \frac{\partial J}{\partial a_2} & \cdots & \frac{\partial J}{\partial a_P} \end{bmatrix}$, is the $(P+Q)\times 1$ complex gradient of J with respect to w, T indicates a transpose operation and, a Hessian matrix, H, is defined as follows:

$$H = \frac{\partial^2 J}{\partial w \partial w^T} = \begin{bmatrix} \frac{\partial^2 J}{\partial a \partial a^T} & \frac{\partial^2 J}{\partial a \partial b^T} \\ \frac{\partial^2 J}{\partial b \partial a^T} & \frac{\partial^2 J}{\partial b \partial b^T} \end{bmatrix} \text{ and}$$

$$\frac{\partial J}{\partial b^T} \equiv \begin{bmatrix} \frac{\partial J}{\partial b_1} & \frac{\partial J}{\partial b_2} & \cdots & \frac{\partial J}{\partial b_Q} \end{bmatrix}.$$

13. (Previously Presented) A polarization mode dispersion compensator in an optical fiber communication system, comprising:

a cascade of two-port all-pass filters having coefficients that are adjusted using a least mean square algorithm, wherein said adjustment is performed by a device.

14. (Previously Presented) The polarization mode dispersion compensator of claim 13, wherein said cascade of two-port all-pass filters comprises a two-channel structure consisting of multiple cascades of all-pass filters and directional couplers.

15. (Original) The polarization mode dispersion compensator of claim 13, wherein said coefficient values are adjusted to minimize a cost function.

16. (Previously Presented) The polarization mode dispersion compensator of claim 13, further comprising a polarization mode dispersion measuring device for measuring said polarization mode dispersion in a received optical signal.

17. (Previously Presented) The polarization mode dispersion compensator of claim 16, wherein said polarization mode dispersion measuring device employs a tunable narrowband optical filter to render information from energy detector measurements.

18. (Previously Presented) A polarization mode dispersion compensator in an optical fiber communication system, comprising:

a cascade of two-port all-pass filters having coefficients that are adjusted using a Newton algorithm, wherein said adjusting step is performed by a device.

19. (Previously Presented) The polarization mode dispersion compensator of claim 18, wherein said cascade of two-port all-pass filters comprises a two-channel structure consisting of multiple cascades of all-pass filters and directional couplers.

20. (Original) The polarization mode dispersion compensator of claim 18, wherein said coefficient values are adjusted to minimize a cost function.

21. (Previously Presented) The polarization mode dispersion compensator of claim 18, further comprising a polarization mode dispersion measuring device for measuring said polarization mode dispersion in a received optical signal.

22. (Previously Presented) The polarization mode dispersion compensator of claim 21, wherein said polarization mode dispersion measuring device employs a tunable narrowband optical filter to render information from energy detector measurements.